

WHAT IS CLAIMED IS:

1. A phosphor having a substantially spherical outer shape, which comprises primary particles having a median diameter D_{50} in a range of from 0.05 μm to 1 μm and
5 secondary particles having a median diameter D_{50} in a range of from 0.1 μm to 2 μm , wherein at least 50 vol% of the total secondary particles has an aspect ratio of at least 0.8 and an internal quantum efficiency is in a range of from 0.8 to 1.
- 10 2. The phosphor according to Claim 1, wherein the phosphor comprises a matrix crystal containing oxygen as an element constituting the matrix crystal and at least one element selected from the group consisting of Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Er, Tm, Yb, As, Bi, Cr, Cu, Fe,
15 Mn, Pb, Sb, Sn, Ti, Tl, V, W and Zn as an activator.
3. The phosphor according to Claim 2, wherein the matrix crystal comprises Ln_2O_3 , LnXO_4 or LnBO_3 , in which Ln represents an element group containing an element selected from the group consisting of La, Gd, Y, Lu and
20 Sc in an amount of at least 80 mol% to the total amount of Ln and X represents P and/or V.
4. The phosphor according to Claim 2, wherein the matrix crystal comprises $a\text{MO} \cdot b\text{A}_2\text{O}_3$, in which a and b are integers of from 1 to 5, A represents an element group
25 containing an element selected from the group consisting of B, Al and Ga in an amount of at least 80 mol% to the total amount of A, and M represents an element group

containing an element selected from the group consisting of Ba, Sr, Ca, Mg and Zn in an amount of at least 80 mol% to the total amount of M.

5. The phosphor according to Claim 1, comprising a
5 matrix crystal of the phosphor which contains at least one element selected from the group consisting of Li, Na, F and Cl in a weight in a concentration range of from 0.1 to 100 ppm.